Core Precalculus
Q1 Lesson Plans

Date	
Topic	
Textbook reference	
Vocabulary	
Objectives/Sequence	
Notes	
HW	

Week of 17-20 August

Date	Tues 8/17
Topic	Intro
Textbook reference	n/a
Objectives/Sequence	Before I leave today, I would like to know… Syllabus/expectations Intro questionnaire
Notes	50 minutes
HW	n/a

Date	Thurs 8/19
Topic	Graphs
Textbook reference	Chapter 1
Objectives/Sequence	Distance/midpoint formulas Graphing an equation – by hand, GDC Intercepts – by hand, GDC GDC – Zero/Intersect Lines – slope, equations of lines, parallel lines Circles – incl. completing the square
Notes	Omit symmetry tests
HW	HW#1 Page 51 (Ch 1 Review) #1-13 odd, 25, 27, 30-48 mult of 3, 52, 55

Week of 23-27 August

Date	Mon 8/23
Topic	Functions and graphs
Textbook reference	2.1, 2.2
Vocabulary	Function, Vertical Line Test, Domain, Range
Objectives/Sequence	• Identifying functions – graphical, numerical • Function notation • Identifying domain – graphical, numerical, algebraic • Identifying range – graphical, numerical • Symmetry wrt x-axis, y-axis, origin -- graphical
Notes	Why are functions so important? • Math is about patterns and relationships involving quantities. • One of most basic is relationship between two different quantities – show graph, table – this is a function? • So then we ask – how do functions work? How can they be combined? What properties should we consider? What specific types of functions should we know? Not discussed
HW	HW#2 Page 68 # 20-95 mult of 5 Page 75 # 9-31 red, 35, 40

Date	Wed 8/25
Topic	Properties of functions
Textbook reference	2.3
Vocabulary	Even/odd functions, increasing/decreasing functions, local max/min, average rate of change
Objectives/Sequence	• Determining local max/min – graphical, GDC • Determining intervals where a function is increasing/decreasing • Finding the average rate of change • Determining whether a function is even/odd/neither – graphical, numerical, algebraic
Notes	
HW	HW#3 Page 86 # 11-20, 21-51 mult of 3

Date	Fri 8/27
Topic	Why study functions?
Textbook reference	
Vocabulary	
Objectives/Sequence	• Every time you have a relationship between two quantities, you have a function. • Examples? • How the properties arise from context
Notes	First quiz Ch 1, 2.1-2.3
HW	

Week of 30 August – 3 September

Date	Tuesday 8/31
Topic	Library of functions
Textbook reference	2.4
Vocabulary	
Objectives/Sequence	• Basic functions matching activity ○ Name, equation, graph, domain/range, symmetry, inc/dec • Greatest integer function • Piece-wise functions
Notes	
HW	HW#4 Page 97 # 9-24 (all), 27-42 mult of 3

Date	Thursday 9/2
Topic	Transformations I
Textbook reference	2.5
Vocabulary	Transformation, reflection, translation, dilation

Objectives/Sequence	• Transformations using basic functions from last time
	  ○ Investigate w/graphing calculator
	  ○ Write down rules
	  ○ Apply to more examples

Notes	Emphasize interplay between graphs, equations, lists of transformations LOTS of questions on piece-wise functions, go over again next time
HW	HW#5 Page 108 # 8-26 even, 27-66 mult of 3

Week of 6-10 September

Date	Monday 9/6
Topic	Transformations (cont'd)
Textbook reference	2.5
Vocabulary	
Objectives/Sequence	• More practice w/piece-wise functions ○ Substitute at endpoints, check dot/circle • More practice w/basic transformations • Graphical transformation problems without equations
Notes	Start w/basic functions mini-quiz
HW	HW#6 Page 110 # 64, 70, 74, 87, 88

Date	Wednesday 9/8
Topic	Mathematical models: building functions
Textbook reference	2.6
Vocabulary	
Objectives/Sequence	
Notes	Topics for Friday review • Stretch/shrink – what do you do? • Piece-wise functions
HW	HW#7 Page 122 Ch Test # 1-7, 10-12 Page 123 Cumulative Rev # 15, 24, 25

Date	Friday 9/10
Topic	Review Ch 1, 2
Textbook reference	
Vocabulary	
Objectives/Sequence	
Notes	
HW	

Week of 13-17 September

Date	Tuesday 9/14
Topic	Test #1 (Chapters 1, 2)
Notes	

Date	Thursday 9/16
Topic	Linear functions and models
Textbook reference	3.1, 3.2
Vocabulary	Rate of change, regression, correlation coefficient
Objectives/Sequence	General linear function Average rate of change Linear regression
Notes	Time permitting – how does the calculator find the equation of the regression line? Gizmo – Lines of Best Fit Using Least Squares – Activity A
HW	HW#8 Page 132 # 15-42 mult of 3 Page 140 # 15-21 odd

Week of 20-24 September

Date	Monday 9/20
Topic	Quadratic functions and graphs
Textbook reference	3.3
Vocabulary	Vertex, axis of symmetry, discriminant
Objectives/Sequence	• Formulas for vertex, axis of symmetry, x-intercepts • Graphing • Vertex form – connect to transformations • Completing the square • Discriminant
Notes	Use basic properties – domain/range, max/min, increasing/decreasing
HW	HW#9 Page 151 # 12-84 mult of 3

No school Wednesday 9/22 Mid-autumn Festival

Date	Thursday 9/23
Topic	Quadratic functions and models
Textbook reference	3.4
Vocabulary	Projectile motion, demand, revenue
Objectives/Sequence	• Finish from last time – discriminant • Quadratic regression • Rate of change of rate of change is constant • Projectile motion • Max revenue from demand equation
Notes	Absent for HS Articulation (@ Pudong) – Laurie to cover, try to stop in Made it for last 20 minutes Class votes for Ch 3 test before Oct break
HW	HW#10 Page 152 # 40, 44, 61, 90 Page 160 # 3-27 red

Week of 27 September – 1 October

Date	Monday 9/27
Topic	Quadratic inequalities and Ch 3 Review
Textbook reference	3.5
Vocabulary	
Objectives/Sequence	• Quadratic inequalities, use shape of graph to determine intervals • Ch 3 Review
Notes	
HW	

Date	Wednesday 9/29
Topic	Ch 3 Test
Notes	Early dismissal for traffic concerns, 65 minute classes Check inequalities problems Avg = 6.58 out of 8 Q1 = 5.5, med = 7, Q3 = 8 3 students with 4 pts (w/o GR results) Spiral back to inequalities, incl. graphical interpretation

Week of 11-15 October

Date	Monday, 10/11/2010 (1st day back after Oct holiday)
Topic	Polynomial functions and graphs
Textbook reference	4.1
Vocabulary	Polynomial, degree, coefficient, leading coefficient, multiplicity, end behavior
Objectives/Sequence	• Basics – degree, leading coefficient, domain • Zeros and multiplicity, # of zeros and turning points • End behavior – function model and appearance
Notes	Go over test first
HW	HW#11 Page 188 # 39-102 mult of 3

Date	Wednesday, 10/13/2010
Topic	Rational functions
Textbook reference	4.2
Vocabulary	Rational function, asymptote
Objectives/Sequence	• Basics – definition, domain • Transformations of $y = 1/x$ and $y = 1/x^2$ • Vertical asymptotes • Horizontal asymptotes • Oblique asymptote – visual only • End behavior
Notes	Leaving early for IBDP meeting at BISS
HW	HW#12 Page 200 # 5-10, 12-48 mult of 3

Date	Friday, 10/15/2010
Topic	Graphs of rational functions
Textbook reference	4.3
Vocabulary	Discontinuity, jump/point/infinite discontinuity
Objectives/Sequence	Analysis of rational function leading to graph • Classification of discontinuities • Intercepts • Asymptotes • Table of selected values • Graph
Notes	Calculator only for this section Announce quiz for Tuesday
HW	HW#13 Page 188 # 37, 46, 64 Page 210 #10, 18, 20, 53

Week of 18-22 October

Date	Tuesday 10/19
Topic	Rational function end behavior
Textbook reference	4.2 (a loose end not covered last time)
Vocabulary	
Objectives/Sequence	• Oblique asymptote by polynomial long division • Rational function end behavior
Notes	Quiz first Time management not good today – only 10 minutes to introduce new topic
HW	HW#14 (due Monday) Page 201 # 35, 37, 44, 50 Page 210 # 17, 30, 52

Date	Thursday 10/21
Topic	Rational function end behavior (cont'd)
Textbook reference	
Vocabulary	
Objectives/Sequence	• Continue from last time • Long division w/placeholder • Rational function end behavior – asymptotic parabolas, etc. • Rational function = end behavior model + rational remainder – use table, graph to show this.
Notes	APAC away – Journalism students too?
HW	HW#14 (repeat from last time -- due Monday) Page 201 # 35, 37, 44, 50 Page 210 # 17, 30, 52